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September 29, 2006

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VIA EMAIL AND US MAIL

Mr. Peter Douglas
Executive Director
California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105-2219

Re: Environmental Defense Center Comments on Proposed Cabrillo Port Air Permit

Dear Mr. Douglas:

BHP Billiton LNG International, Inc ("BHP") has reviewed the August 2, 2006 comment letter prepared by the Environmental Defense Center ("EDC") (the "EDC letter") and its two primary attachments, the July 31, 2006 letter from Powers Engineering (the "Powers letter") and the July 26, 2006 letter from Camille Sears (the "Sears letter"). The EDC letter was submitted to the U.S. Environmental Protection Agency ("EPA") regarding the draft Cabrillo Port Authority to Construct ("ATC") which would authorize construction of those portions of the project defined as the "stationary source". The EDC letter, the Powers letter and the Sears letter contain several legitimate questions that we attempt to answer as completely as possible. The letters also contain multiple erroneous statements regarding Cabrillo Port that we have endeavored to correct. In sum, this letter identifies each of the comments made in the EDC letter, the Powers letter and the Sears letter and provides a point-by-point response. Because the EDC letter repeats many of the points made in the Powers letter and Sears letter, we begin with those two letters and then follow with our response to those portions of the EDC letter not already addressed. Our responses follow the format in each of the letters and are not stated in order of importance.



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1. **Response to the Sears Letter**

a. **Introduction**

The introduction to the Sears letter states the basic (and inaccurate) premise of the letter, namely that the project emissions are underestimated and that the project will result in increased air emissions entering the South Central Coast and South Coast Air Basins. The current estimate of the Cabrillo Port emissions, including all associated vessel emissions extending out to the border of Federal Waters, are summarized below.

Cabrillo Port Emissions Inventory (tons per year)					
	NOx	ROC	CO	SO ₂	PM ₁₀
FSRU ^a	75.7	31.5	178.7	0.42	12.8
FSRU + Vessels in Federal Waters	124.5	49.5	220.6	0.6	15.1

^a FSRU emissions include emissions from support vessels in District waters and emissions from operating carrier generators to operate LNG transfer pumps.

You will note that these emissions have changed in response to comments received on the draft ATC, including, among other things, attributing the carrier emissions from operating the LNG transfer pumps to the FSRU, revising the annual carrier visits to reflect the current operating scenario and utilization of manufacturer performance specifications (plus a 33% safety factor) for the carrier engines.

As we have discussed, BHP has proposed to fully mitigate Cabrillo Port's impacts by repowering the propulsion engines on two tugs that currently are emitting hundreds of tons per year of nitrogen oxides ("NOx"), a primary component required for the formation of ozone, along the Southern California coastline. The emission reductions attributable to these two projects are significantly greater than the emissions that will arise from Cabrillo Port as a whole. If Cabrillo Port were subject to permitting as an onshore source, it would only be required to purchase Emission Reduction Credits ("ERCs") based on the emissions from the stationary source (*i.e.*, 75.7 tons per year). In addition, if BHP were to have purchased ERCs, it would be purchasing emission reductions that took place years, maybe even more than a decade previously, and that have long since been recognized in the airshed. The reductions could also have occurred at inland locations that have little connection to coastal air quality. That is the way that the ERC



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program works.¹ By paying for the repowering of currently operating marine vessels BHP is ensuring that actual new emission reductions occur in the same area as the project. In addition, the reductions far outweigh the tonnage of ERCs that would be required under the onshore permitting regime. Therefore, BHP's proposal is superior to what would be required were the project built and permitted onshore.

b. Project Emissions Will Not Cause Significant Impact to Onshore Air Quality

Ms. Sears' first comment consists of a lengthy discussion of wind patterns in Southern California. As Ms. Sears' describes, much of the time the wind blows onshore in this area. As noted in her attachments, the wind along the Southern California coast moves in a very predictable pattern of onshore sea breezes through much of the day followed by offshore land breezes as one moves into evening. This onshore/offshore cycle moves air back and forth across the California coastline while also moving it in a southward direction, ultimately depositing it into the South Coast Air Basin. This is described in Ms. Sears' attachment entitled *Southland Weather Handbook* as follows:

"The most pronounced jets known on the California coast are near Point Sur, south of Monterey Bay, and near Point Arguello, west of Santa Barbara. Both points often experience northerly [i.e., winds blowing south] wind velocities of 30 to 50 miles per hour during the summer half of the year, and Arguello is known by mariners as the graveyard for ships caught in the blast while rounding the point.

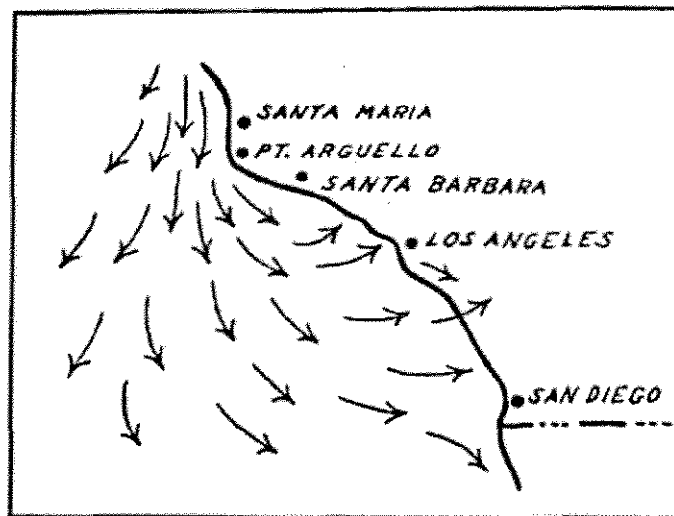
"The northerly jet of wind at Point Arguello extends in diminishing force to nearby islands, often as far as San Nicolas Island, and produces the largest of the eddies, embracing the area from Arguello to San Diego. It is known as the "Catalina Eddy" and exerts a great influence on our Southland weather."

¹ So long as the reductions resulting in a credit took place after 1990, they are capable of being banked as ERCs and then used to offset new emission sources. See Ventura County APCD Rule 26.4(B)(7). For example, Southern California Edison holds a Ventura County APCD ERC certificate for NOx which can be used at any time (unrestricted). The ERC is under Certificate No. 1109 recorded on September 7, 1994 as a result of the electrification of an engine (Nisbet Company). Therefore, if a project wanted to utilize that certificated ERC, it would be relying on reductions that occurred over 12 years ago. In fact, many of the banked credits in Ventura County derive from reductions that occurred in the early 1990s.



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This passage describes the way in which air is moved, particularly during the ozone season, from California's North Central Coast Basin down to the South Coast Air Basin. The phenomenon is well described by the following figure, appearing immediately below the text quoted above in the document. This figure demonstrates why emissions from vessels operating much further north along the California coast have a direct impact on air quality in Ventura and Los Angeles counties.²



Typical Catalina Eddy during late afternoon
of an average summer day

² Interestingly, Ms. Sears includes in her materials reports stating that ozone exceedances in Ventura County are primarily caused by transport from Los Angeles County. For example, one of her references states "all of the exceedance days in Ventura County during the field program occurred when the wind aloft was directed from Los Angeles County." *Analysis of Aerometric and Meteorological Data for the Ventura County Region* at page 6-4. The document concludes by saying "The results also indicate that reduction of HC and NOx emissions in Ventura County may have little or no effect on maximum ozone concentrations in the County under certain meteorological conditions. Thus it should be recognized that Ventura County can be a downwind receptor for ozone generated from SCAB [South Coast Air Basin] emissions much like Riverside and San Bernardino Counties." This strongly suggests that Cabrillo Port's emissions would not influence air quality in Ventura County on those days where there is the greatest potential for ozone exceedances.



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This figure graphically depicts a key reason why the South Coast Air Basin faces such extreme challenges addressing its air quality. The region is the end of the “emissions pipeline” that starts in Northern California.

Ms. Sears materials strongly support the value of the mitigation being proposed by BHP. Cabrillo Port is proposed for construction right at the junction of two air basins, the South Coast Air Basin and the South Central Coast Air Basin. Emissions occurring in the shipping channels, even emissions occurring much further north than Cabrillo Port, will ultimately be blown onshore and pass through the South Central Coast Air Basin before being deposited in the South Coast Air Basin. The modeling prepared as part of the ATC application demonstrates that these emissions will be at insignificant concentrations when they are blown onshore. However, notwithstanding this fact, BHP has proposed coastal mitigation that will reduce emissions immediately off the coastline, thus benefiting both of these air basins. The reductions in emissions are significantly greater than the emissions from the stationary source. Therefore, even if one chooses to disregard the dilute nature of the project’s NO_x emissions as they reach shore, it is uncontroverted that the total mass of NO_x emissions reaching shore will be less if Cabrillo Port is built.

What Ms. Sears argument and documentation does not provide is a basis to conclude that the Cabrillo Port emissions have a significant onshore impact any more than emissions from sources on San Nicolas Island or Anacapa Island are considered to have a significant onshore impact. EPA long ago established the concept that if a source located in an attainment area emits pollutants that result in ambient concentrations below significance levels, that source is not considered to cause or contribute to downwind exceedances. 40 CFR § 51.165(b)(2). These significance levels offer a good metric for whether Cabrillo Port is materially impacting onshore air quality. The modeling included with the application document that Cabrillo Port is not having a significant impact upon onshore air quality. This is consistent with the determination previously made by the Ventura County Air Pollution Control District (“APCD”), the California Air Resources Board (“CARB”) and EPA that the much larger sources of emissions located on San Nicolas Island (that are equally caught in the Catalina Eddy) are not impacting onshore air quality. Notwithstanding this showing, however, BHP is still offering to reduce offshore NO_x emissions by an amount greater than the project will emit.

c. Cabrillo Port’s Emissions Will Not Impact Onshore Ozone Levels

Ms. Sears next comment at the bottom of page 8 of her letter largely restates the previous comment, while adding in the curious allegation that BHP has acted inappropriately by modeling its NO_x and ROC transport using the OCD model, an EPA approved Gaussian dispersion model.



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The key aspect of this comment is that it demands that Ventura County APCD change the way that it has applied its new source review program for many years prior to Cabrillo Port being proposed. Ms. Sears alleges inappropriate conduct on EPA's part by not requiring modeling of the tug and carrier emissions that occur in Federal Waters. As Ms. Sears knows, EPA has permitting authority over the stationary source only and not over the vessels at sea. EPA applied the Ventura County APCD rules in determining what constitutes the stationary source. The Ventura County APCD explained in writing to EPA in the June 18, 2004 letter from Michael Villegas (Ventura County APCD) to Gerardo Rios (EPA Region IX) how to determine what sources should be included in the stationary source. This does not include "to and fro" vessel emissions or vessel hoteling emissions. This is standard air district procedure and was not unique to this project. Criticizing EPA for not assessing emissions as part of the stationary source permit process where those emissions are not part of the stationary source is inappropriate. There are other processes under NEPA and CEQA for addressing the full project impacts. It is not within EPA's jurisdiction to do so when drafting the ATC.

d. The ATC Utilizes Correct Emission Factors for the FSRU Main Generators

Ms. Sears incorrectly suggests that the emissions from the 9L50DF Wartsila main generator engines at the FSRU are based on an inappropriate emission factor. She hypothesizes that because the NOx emission factor underlying the calculations is based on one load, it will not be representative of the FSRU operations. There are three fundamental flaws with Ms. Sears' logic. First, the generator engines do not operate at materially reduced loads. Emissions out the back of an individual engine would be higher if operated at a significantly reduced load, such as the 50 percent hypothesized by Ms. Sears. However, the purpose of having multiple generator engines is to match the number of engines to the load. If 8,000 kW were needed, BHP would not operate three engines at one-third load, it would operate one engine at full load. Second, the emission rate out the back of the engines is not the emission rate being discussed. The emission rate used to determine emissions is the emission rate out the back of the control devices. As Ms. Sears is fully aware, the control devices can respond instantaneously to changes in the emission rate coming out the back of the engines and control for any variations due to operating at 75 percent load instead of 90 percent load. Finally, and perhaps most fundamentally, the primary pollutant emissions from the generator engines will be continuously monitored by certified instruments that are calibrated daily. If BHP cannot comply with its permit limits then EPA will know about it and be able to take enforcement action including, but not limited to, shutting the facility down. Therefore, the risk of not meeting the emission rates stated in the application is entirely BHP's. Ms. Sears' comment is an attempt to create an issue when none exists.



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- e. EPA Appropriately Considered All Stationary Source Emissions Units
 - i. LNG Carriers

In this comment Ms. Sears reiterates her opinion that she would prefer that the Clean Air Act's stationary source permitting program extended beyond stationary sources. However, that is not the way that the Clean Air Act regulates sources. Stationary sources go through the new source review program while mobile sources are addressed through categorical standards. It is well established law that vessels are "mobile sources" under the Clean Air Act. *NRDC v. USEPA*, 725 F.2d 761 (D.C. Circuit 1984). In that case the court concluded that emissions associated with the unloading activity of the vessel could be attributed to the stationary source served by the vessel, but that emissions associated with traveling to and from the port could not.

Neither Ventura County APCD nor South Coast AQMD consider emissions from vessels operating outside of District waters to be part of the stationary source permitting process except in very specific circumstances not relevant to Cabrillo Port. Early in the permitting process EPA contacted Ventura County APCD to obtain a formal declaration of how the local rules define what is considered part of the stationary source. In the letter dated June 18, 2004, the Ventura County APCD explained to EPA that the LNG carrier emissions are not part of the stationary source emissions except to the extent that they occur within District waters or they result from the loading or unloading of the carriers. EPA applied the rules as written and as interpreted by the air district. We note that the air district has never objected to EPA's application of its rules as being inconsistent with the air district's interpretation. Given that the carrier propulsion emissions are not part of the stationary source, Ms. Sears' complaint that EPA failed to adequately address the carrier propulsion emissions in drafting the stationary source permit is without any legal or regulatory basis. EPA's discussion of the carrier emissions in the ATC background document is purely informational and irrelevant to the stationary source air permit process. Total project impacts are separately evaluated as part of the NEPA/CEQA process. Ms. Sears' comment attempts to blur the distinction between the two review processes.

There are clear policy reasons why vessel propulsion emissions are not part of the stationary source permitting process. The Clean Air Act makes a clear distinction between mobile sources and stationary sources. The Clean Air Act's new source review program applies to the latter, a point that has been reiterated on multiple occasions. The policy underlying this distinction is sound. Mobile sources are, by definition, mass produced. It is neither prudent nor efficient to try and regulate each mass produced source individually. That is much better done through categorical standards. California has led the country in terms of establishing mobile source categorical standards that are far stricter than what the federal government requires. Stationary



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sources, by contrast, are custom built. Whether it is a cement plant or a power plant, each is built differently to match its stationary locale. Therefore, the decision was made early on both in California and at the federal level that source-specific review was appropriate for stationary sources. Ms. Sears appears to try to reverse this longstanding policy. However, EPA appropriately restricted its analysis to the stationary source.

Ms. Sears also complains that the ATC does not identify specific LNG carriers that can operate on dual fuel diesel-electric engines. This complaint makes no sense. There are multiple dual fuel diesel-electric engine powered LNG carriers operating in the world today and specifications concerning the vessels are readily available. However, we recognize Ms. Sears' corollary comment that BHP should use manufacturer specific emission factors rather than the generic "AP-42" emission factors promulgated by EPA. For that reason, we have revised the emissions inventory to use the Wartsila emission factors and added another 33 percent emissions to those factors as a safety factor to allow for any variations associated with load, aging or differences between manufacturers. The current engine-specific emission factor, even with a 33 percent safety factor, is approximately 40 percent lower than the old emission factor stated in AP-42. With this change, we believe that we have addressed Ms. Sears' concern. This revised emission factor is reflected in the emissions summary given at the outset of this letter.

On page 16 of her letter, Ms. Sears attempts to confuse the scope of the ATC process by criticizing EPA and BHP for not considering the carrier emissions that occur outside of Federal waters. As noted above, the ATC authorizes construction of the stationary source—no more and no less. The ATC does not involve or address the carrier transit emissions as they are not part of the stationary source. This comment therefore has no relevance to EPA's process of issuing an ATC for the stationary source.³

Ms. Sears also mischaracterizes BHP's commitment to utilize natural gas within Federal waters, by suggesting that it is a given that BHP would switch to diesel once outside of Federal waters. The fuel to be used when traversing the Pacific's international waters is a choice that will be made by the vessel captain based on a variety of factors. There is no certainty that diesel would

³ We note that even if the carrier emissions were relevant to the ATC, Ms. Sears' calculations overstate the vessel emissions considerably. As the attached emission inventories demonstrate, the LNG carriers only contribute 21.1 tons per year of NOx while operating in Federal waters. Even if the emissions were calculated to the edge of California Coastal waters, the total would only increase by 35.7 tons per year to an aggregate total of 56.8 tons per year of NOx from the carriers. See Table FW 10 of the attached emissions calculations. This amount is far less than the 114 tons per year of NOx cited by Ms. Sears.



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be used. However, in order to allay the concern within California Coastal Waters BHP is willing to commit as part of the EIR process to use natural gas (with the 1 percent pilot fuel) while operating within California Coastal waters. We believe that this commitment eliminated Ms. Sears' concern.

ii. Tug Boats

In this comment Ms. Sears complains that the tug boat emissions are understated based on inaccurate load assumptions. This comment reflects a lack of familiarity with how a diesel-electric vessel operates. Unlike conventional vessels where there are one or two propulsion engines that directly power the propulsion mechanism, a diesel-electric system consists of multiple engines that operate according to load requirements. This system results in substantially lower emissions because each engine operates in its optimal range, as well as offering the benefit of redundancy. For example, a likely configuration for a tug servicing Cabrillo Port would be to have two (2) 4L32DF and three (3) 8L32DF engine-generators. With this type of configuration, in each power step, the engines are running at or near maximum load for high efficiency and low emissions. Several possible power combinations are shown in Table 1 to demonstrate how this type of vessel meets its power needs. Since the engines are operated at the upper range of their power curve, the low emission rates of 1.3 g/kW-hr NO_x and 1.9 g/kW-hr CO are maintained. Thus, these emission factors correctly represent the anticipated emission rates and the tug is not run at a fraction of the any engine's rating.

Conceptual Tug Supply Boat Engine-Generator Combinations						
Power Scenario	Percent of Total Propulsion Power	4L32DF #1	4L32DF #2	8L32DF #3	8L32DF #4	8L32DF #5
A	12.5%	♦				
B	25.0%			♦		
C	37.5%		♦	♦		
D	50.0%			♦	♦	
E	62.5%	♦		♦	♦	
F	75.0%			♦	♦	♦
G	87.5%		♦	♦	♦	♦
H	100.0%	♦	♦	♦	♦	♦



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Since Ms. Sears drafted this comment, BHP has determined that it can best address concerns raised in the comments by using heavily controlled modern diesel engines in the Cabrillo Port tugs and the crew boat. All three support vessels periodically visit shore. BHP had proposed to utilize natural gas fired engines with the fuel being stored as LNG (CNG is too bulky for use in vessels such as these). The gas fired tugs were proposed in order to decrease emissions as compared to the diesel fired tugs conventionally used. Numerous parties have expressed discomfort regarding the presence of LNG in the vessel holds during port visits. In order to find a means of retaining the emissions benefits garnered by using natural gas fired vessels while also trying to resolve these concerns, BHP turned to its marine engineers and the engine manufacturers to see if another solution was viable. They had previously determined that the space needs and complexity of a gas fired vessel made the use of tailpipe controls unfeasible. However they determined that a conventional diesel vessel can be controlled. While we are unaware of any controlled tugs or crew boats operating off the California coast, we understand that there are controlled tugs and crew boats operating elsewhere in the world. By installing a broad suite of controls on these engines BHP can ensure that the emissions of all pollutants but sulfur dioxide (i.e., NO_x, CO, VOC and PM₁₀) will stay equal to, or possibly less than, the emissions of natural gas fired vessels. SO₂ emissions will increase slightly notwithstanding the use of low sulfur California diesel. By introducing controlled diesel engines to heavy duty marine vessels in Southern California BHP will set an important precedent that will ultimately result in lower marine emissions throughout the region. Based on this change in equipment, BHP has identified controlled diesel vessels in its Vessels in Federal Waters emissions inventory. We note that only 80 percent removal efficiency was assumed in calculating emissions. The manufacturer has stated that much higher control efficiencies are likely (one quote stated we could achieve over 95 percent NO_x removal). However, BHP is only claiming 80 percent removal efficiency specifically to ensure that at lower loads the emissions are kept below the rate assumed in the emissions inventory.

f. Project Startup Emissions

At page 19 of the letter Ms. Sears complains about EPA including startup emissions, but not including mitigation requirements during startup. BHP finds that this comment exemplifies the tension running throughout Ms. Sears letter in that it confuses the EIR with the ATC. Mitigation is not a concept relevant to the ATC, but rather a concept employed in the EIR process. What is necessary for EPA to do in issuing the ATC is ensure that emissions are maintained at appropriate levels. This EPA does by imposing specific and enforceable limits on startup emissions. This more than satisfies EPA's responsibilities as the permitting authority. We note that the startup emissions were modeled as part of the CEQA process and the onshore impacts are not materially different from normal project operations.



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g. Gas Properties Were Properly Considered

At page 19 of the letter Ms. Sears also attempts to inappropriately drag an argument made as part of her EIR comments into the ATC discussion. Ms. Sears' argument is that EPA should consider emissions from the ultimate end users of the gas delivered to Cabrillo Port in permitting Cabrillo Port. This argument is completely inappropriate in the context of ATC discussions. We are unaware of any stationary source construction permit ever including the emissions from customers who buy a product made by the source. The application is based on the delivery of Scarborough gas and EPA has evaluated it as such. If different gas were ever delivered, then the FSRU would still need to comply with the same emission limits—with compliance continuously monitored as required by the permit. The question of the heating value of the gas delivered is being assessed as part of the EIR/EIS process. It is not relevant to the stationary source permitting process.

h. Offsetting of Cabrillo Port Emissions

At page 20 of her letter, Ms. Sears objects that Cabrillo Port is not being required to offset its NOx emissions while ignoring the fact that BHP is repowering two tugs that operate off the California coastline and that the emission reductions will far outpace the emission increases attributable to Cabrillo Port. As noted at the outset of this letter, the only equipment considered as part of the ATC issuance process is the stationary source. The stationary source is responsible for 75.7 tons per year of NOx emissions. Although not required as part of the air permitting process, BHP has committed to reducing emissions far in excess of the 75.7 tons of NOx emitted by the stationary source .

Although the ATC does not authorize, and so EPA is not tasked with evaluating, emissions other than those from the stationary source, BHP has committed to reduce NOx emissions in excess of the aggregate amount that will be emitted from the stationary source and the vessels operating in Federal waters. The aggregate NOx emissions attributable to Cabrillo Port and the associated vessel emissions within Federal waters is 124.5 tons per year. Even if you add the emissions from carriers extending out to the edge of California Coastal Waters the total is only 160 tons NOx per year. BHP has proposed to repower the propulsion engines on two tugs, with aggregate NOx reductions within California Coastal Waters of more than 175 tons per year. Because Cabrillo Port is located outside the nonattainment portion of Ventura County it is not required to obtain banked emission reduction credits representing emission reduction projects that happened 10 or 15 (or more) years ago. However, BHP is obtaining actual contemporaneous emission reductions from two vessels plying the California coastline that are currently emitting hundreds of tons of NOx per year. If Cabrillo Port is built, these vessels' engines will be replaced with



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new, clean diesel engines that will result in real improvements to Ventura County's air quality. This is a better outcome for the airshed than if Cabrillo Port were permitted as an onshore source.

i. BHP Has Proposed Emission reductions Far in Excess of Cabrillo Port's Emissions

For the first time, at page 22 of her letter, Ms. Sears acknowledges the several hundred tons of emission reductions being proposed by BHP as part of the Cabrillo Port project. Although Ms. Sears complains bitterly about the mitigation proposal, it is difficult to determine what her ultimate concern is. She complains that these reductions are not equivalent to what would be required to qualify as offsets while ignoring the fact that the emission reductions are being very conservatively calculated under the South Coast AQMD State Implementation Plan approved emission reduction credit methodology for marine vessel repowerings. Ms. Sears states earlier in the letter that any emissions occurring in California Coastal Waters will eventually be blown onshore and make their way to the South Coast or Southern Central Coast Air Basins but then complains here that emissions reductions occurring off the Santa Barbara coastline and further north should not be considered appropriate mitigation. Ms. Sears cannot have it both ways. If BHP is to be held to the standard of including all emissions that occur within California Coastal Waters based on the concept that the meteorology patterns eventually bring them to Southern California, BHP should also be able to mitigate based on emissions along the California coastline. Ms. Sears acknowledges the veracity of this logic at page 25 of her comments where she says that it is fair and reasonable to include all emission reductions along the coastline if one also includes all project emissions within California Coastal Waters. As noted above, even if one includes carrier emissions out to the edge of California Coastal Waters, the total emission reductions still significantly outpace the emissions associated with Cabrillo Port.

j. Conclusion

Throughout her comment letter Ms. Sears tries to obscure the difference between EPA's stationary source permitting and the CEQA/NEPA process. These comments are ostensibly about the stationary source construction permit. That permit is limited to the stationary source and does not include the vessel emissions except to the extent that they are associated with loading and unloading the vessel. Ms. Sears repeatedly attempts to ignore this legal requirement. BHP does not disagree that the full project impacts should be evaluated. However, the law does not accord that duty to EPA in issuing the stationary source construction permit. Only the stationary source emissions are reviewed as part of that exercise. The project emissions as a whole are the subject of the EIR and EIS. Comments unique to that process should not be argued in relation to the stationary source construction permit.



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2. Powers Engineering Letter

Unlike the Sears letter, the Powers letter focuses almost exclusively on criticizing the controls proposed for Cabrillo Port. As noted above, the ATC applies solely to that equipment which is part of the stationary source. After extensive consultation with the local permitting authority, EPA defined what activities must be included as part of the stationary source. This description appeared in the June 29, 2004 letter from Gerardo Rios to Steve Meheen. Under the permitting approach adopted by EPA, Cabrillo Port is not subject to the requirement to install BACT. Nonetheless, BHP has committed to utilizing BACT so that it was clear that there was no advantage to the company associated with being located offshore and to underscore to the community the company's commitment to minimize its environmental footprint. As a result, the company evaluated its emission units in relation to BACT requirements. An updated BACT analysis was submitted to EPA in May 2005. A copy of that submittal is attached. EPA responded in turn by assessing BHP's proposed controls in relation to the standard established by BACT, ultimately concluding that the proposed level of control constitutes BACT. Nothing in the Powers letter contradicts that conclusion. Instead, Mr. Powers cites numbers incorrectly and otherwise confuses figures in an apparent attempt to mislead the reader into thinking that BHP is not proposing to employ BACT. Below we address each of his comments.

a. Internal Combustion Engines Employ BACT

In his first comment, Mr. Powers incorrectly suggests that the use of selective catalytic reduction and oxidation catalysts on the power generator engines is not BACT. This is simply not the case. Over two years ago, BHP consulted with Ventura County APCD permitting staff regarding BACT for the generator engines. The Ventura County APCD staff informed BHP that BACT for this type of generator engine was 9 ppmv NO_x at 15% oxygen. BHP also proposed 33 ppm CO and 0.15 g/bhp-hr ROC, which was considered acceptable to the District. BHP did not stop with this evaluation, but performed further BACT analysis using EPA's top-down methodology. This analysis was submitted to EPA in May 2005. Based on this analysis, BHP concluded that NO_x emissions of 9 ppmv at 15% oxygen was BACT. Nonetheless, BHP continued to explore whether there were means to further decrease NO_x emissions by going beyond BACT. Based on this evaluation, BHP ultimately concluded that with the proposed controls and the use of Wartsila (or equivalent) engines that it could achieve 7.5 ppmv NO_x at 15% oxygen. This very aggressive level of control sets a new standard for BACT for this class of engines and this application type.

Mr. Powers misleads the Coastal Commission and EPA in his comments by citing to a CARB document describing BACT for onshore electric utility generating engines but failing to include



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Table B-3 of the document identifying BACT as 8 ppmv. That CARB guidance document cited by Mr. Powers applies to onshore engines generating power to the grid. Because Cabrillo Port's engines are neither onshore nor supplying energy to the grid, and so operate in a different fashion, the CARB document is arguably not relevant to Cabrillo Port. However, assuming that the guidance is relevant it states that Cabrillo Port's internal combustion engines will perform better than BACT. Mr. Powers plays a bit of sleight of hand with the numbers when he states "The California ARB July 2002 'Guidance for the Permitting of Electrical Generation Technologies' identifies 5 ppm (0.07 g/bhp-hr) as the BACT NOx level for large natural gas fired internal combustion engines." Powers letter at 3. Mr. Powers repeatedly states that 0.07 g/bhp-hr is equated by CARB to 5 ppm. However, Mr. Powers never supports this conversion and inexplicably leaves out of his appendices the portion of the CARB guidance document where the state agency actually states BACT in terms of a ppm value. If Mr. Powers had not forgotten to include this portion of the CARB guidance document, EPA and the Coastal Commission would have seen that the BACT level for the Wartsila engine that Mr. Powers describes is listed as 0.07 g/bhp-hr or **8 ppmv**. That table is reproduced below:

Table B-3
Emission Control Requirements for Engines Using Fossil Fuel

Facility Name	District / State	Description of Basic Equipment	Method of control	Permit Status	Permit Limit (g/bhp-hr)			
					NOx	VOC	CO	NH3
Aera Energy--Orfield	SVUAPCD	(5) 800 bhp Superior 60-625 non-burn engines or (2) 1478 bhp Waukesha 7042 GSI non-burn engines driving natural gas compressors	3-way catalyst; Quick-Lite 3-DC74 and air/fuel ratio controller	ATC 1/01	0.071	0.009	0.003	NA
Claremont Club--Claremont	SCAQMD	(3) 68 bhp non-burn engine cogeneration system	3-way catalyst; Miratech MH-11T-04F and air/fuel ratio controller	PTO 5/01	0.15	0.15	0.6	NA
College of the Desert--Palm Desert	SCAQMD	(6) 1 bhp Tecumseh/Tecogen 7400LE non-burn engine driving a compressor	3-way catalyst and air/fuel ratio controller	PTO 2/00	0.15	0.15	0.6	NA
Crestline Village Water District--Crestline	SCAQMD	64 bhp Ford L50675 non-burn engine driving a generator	3-way catalyst; Miratech MH-09-04F-02 and air/fuel ratio controller	PTO 10/00	0.15	0.15	0.6	NA
GPI's Onions--Oxnard	Ventura Co. APCD	(3) 158 bhp Teledyne T400LE non-burn engine driving refrigeration compressor; 250 bhp Waukesha P11 GSI non-burn engine driving an air compressor; and 815 bhp Caterpillar G3512 non-burn engine driving an air compressor	3-way catalyst and air/fuel ratio controller	ATC 4/98	8 ppmvd	27 ppmvd	62 ppmvd	NA
JST Energy LLC--Red Bluff	Tehama Co. APCD	(10) 3,928 bhp Wartsila 18V220SG lean-burn engine driving 2,920 KW generator for a total of 29 MW	SCR and oxidation catalyst; Miratech/Hug EM77-0 SCR and Oxcat oxidation catalyst	ATC 5/01	0.07 or 8 ppmvd	0.15 or 50 ppmvd	0.85 or 107 ppmvd	10 ppmvd



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As can be seen, the engines addressed in Table B-3 above are dramatically smaller than the engines proposed for Cabrillo Port's power generation. The JST Energy engines were driving 2,925 kW generators while the Cabrillo Port engines drive 8,250 kW generators. Therefore, there is a serious question as to the relevancy of these relatively tiny engines to the Cabrillo Port engines. Nonetheless, what BHP proposed and both EPA and Ventura County APCD concluded was BACT is lower than the 8 ppmv value listed in Table B-3 of California ARB's July 2002 *Guidance for the Permitting of Electrical Generation Technologies*. By proposing BACT as 7.5 ppmv, BHP is going further than what is required by BACT.

BHP finds it ironic that the Powers letter and the Sears letter are both attachments to the EDC comment letter as they argue diametrically opposed positions. Ms. Sears criticizes BHP for understating emissions and alleges that the emissions from the generator engines should be considered higher. Mr. Powers argues that they should be lower. Neither Mr. Powers nor Ms. Sears suggests that Wartsila-type dual fuel diesel-electric engines equipped with SCR and oxidation catalysts are anything but the most technically advanced engines in the world today with the lowest possible emissions. In fact, Mr. Powers even goes so far as to cite approvingly to Wartsila engines (albeit a different engine class) in his comments. It appears that while Ms. Sears and Mr. Powers may disagree as to whether BHP's numbers are too high or too low, nobody disagrees that BHP's choice of engine technology and control technology is the best available in the world.

b. SCVs Utilize BACT

Mr. Powers next comment is perhaps one of the most misleading of all the comments in his letter. Mr. Powers suggests that the proposed low-NOx SCVs do not constitute BACT. His basis for making this statement is that two other projects (Neptune Suez and Northeast Gateway) have been proposed that will utilize SCR and that the emission rates on those projects are only 5 ppmv NOx. Mr. Powers then suggests that since these projects achieve 5 ppmv NOx, they are significantly cleaner than Cabrillo Port. This is a flagrantly deceptive comment. One can never try and compare a concentration based limit on one type of technology to a concentration based limit on a different technology. Two technologies can share the same concentration based limit, but if the second technology emits twice the air flow due to burning twice the amount of fuel, the second technology will emit twice the pollutant load. Just considering concentration without knowing flow is meaningless. As is clearly stated in all of the permitting materials, the Neptune Suez and Northeast Gateway projects use shell and tube vaporization—a fundamentally different and less efficient gasification technology. As a result, they use more fuel in order to gasify an equivalent amount of LNG. This means that the gasification technology proposed by Neptune



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Suez and Northeast Gateway result in more NO_x emissions—even after the use of 90% control technology—then what is proposed by BHP.

The fallacy underlying Mr. Powers suggestion that the controlled shell and tube technology is cleaner than the low NO_x burner SCV technology is easily demonstrated. The Northeast Gateway project is asking to be permitted for an annual average sendout of 400 million cubic feet of gas per day. This is exactly half the average daily sendout of 800 million cubic feet per day that is the basis for Cabrillo Port. However, the projected NO_x emissions from Northeast Gateway are 49 tons per year. The projected NO_x emissions from Cabrillo Port are 76 tons per year. This means that Northeast Gateway would emit 245 lbs/mcfd while Cabrillo Port would emit only 189.3 lbs/mcfd. In short, the controlled shell and tube vaporization technology with SCR emits 30 percent more NO_x on a gas sendout basis than the SCV technology. Whether SCR can actually work on an offshore shell and tube vaporizer facility is still unproven. However, to suggest that SCR on shell and tube vaporization results in lower emissions than the technology proposed by BHP is blatantly untrue.

Mr. Powers goes on to wrongly suggest that an SCR system could be placed on the FSRU along with the duct burners necessary to warm the exhaust stream up to the temperatures necessary to support the catalytic reaction process. This statement is also misleading. The shell and tube systems such as those proposed for the Neptune Suez and Northeast Gateway projects rely on ship boilers for steam and electricity generation. Similar to the internal combustion engines proposed for Cabrillo Port's power generation, SCR is readily adaptable to the high temperature emissions discharge from a marine boiler. However, that does not mean that the technology can be moved over for use in the fundamentally different exhaust stream from the SCVs. A key advantage of SCV is its very high heat transfer efficiency, estimated at slightly higher than 98 percent. This means that a single SCV with a heat input of 115 MMBtu/hr transfers 112.7 MMBtu/hr to vaporize LNG. This high efficiency minimizes emissions of the greenhouse gas carbon dioxide, since a minimum amount of fuel gas is burned. However it also means that there is no residual heat. As SCR requires the exhaust gas to be at 600 – 650 °F, this means that you need to then burn a large amount of gas to make up for the thermal efficiency of the SCVs and move the exhaust gas back to the required temperature for the controls to work.



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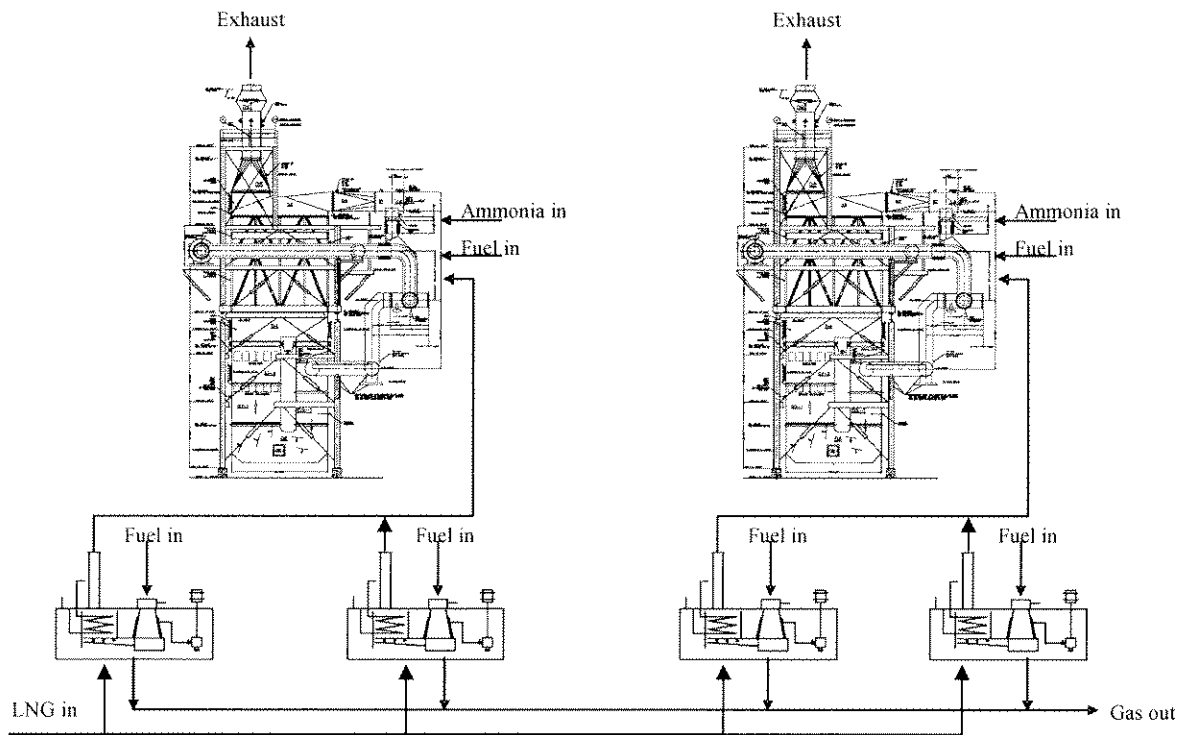
BHP's engineers carefully considered the duct burner option. Many physical, technical, and cost problems were identified by BHP's engineers after discussions with both the owner and the contractors for the one onshore facility utilizing SCR on SCVs. Based on this evaluation, included as an attachment to this letter, BHP's engineers concluded that SCR is not a technically feasible or demonstrated technology. In addition, the use of duct burners to reheat the cold (70 – 80 °F) SCV exhaust to 600 – 650 °F at the SCR inlet would increase greenhouse gas emissions from the FSRU. Using SCV exhaust gas physical properties from Selas specifications and assuming 85% recuperative heat recovery, a quick calculation shows that four (4) SCVs operating continuously would require an estimated duct burner heat input of about 12 MMBtu/hr (which is higher than the 4 to 5 MMBtu/hr estimated in the comment letter), or about 104 mmcf/yr fuel gas. This would result in an additional 6,260 tons per year of carbon dioxide and about 4 tons per year of additional carbon monoxide emissions (using AP-42 emission factors). The overall effect would be to increase SCV fuel gas consumption by about 2.6%. Therefore, this option of using duct burner technology was not considered appropriate by BHP's process engineers or by EPA.

As the permitting record reflects, BHP and EPA had extensive discussion over the possibility of utilizing SCR on the SCVs. The primary concerns were the size of the unit necessary to control the SCVs and the uncertainty of how such a large unit would work in a marine environment. Mr. Powers cavalierly suggests that two gas-gas heat exchanger/SCR systems could be mounted above the SCVs on the FSRU. However, this comment reflects a profound lack of appreciation of the nature of a marine source. Any addition of topside weight to the FSRU has serious ramifications for the safety of the facility as it increases the tendency of the FSRU to roll in heavy seas. The size of the units necessary for the volume of exhaust gas coming from the SCVs was determined by BHP's engineers and drawings prepared to provide a sense of scale. These drawings (submitted to EPA in May 2005) are reproduced below.



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SCVs Shown in Relation to SCRs (4 out of 8 SCVs shown)



In order to develop a system consistent with Mr. Powers design BHP would essentially need to convert to a shell and tube system such as that proposed by Neptune Suez and Northeast Gateway. However, as noted above, shell and tube vaporization technology is between 5 and 10 times less efficient than the SCV technology proposed by BHP. As a result, the emissions, even with SCR, are well in excess of those from BHP's proposed technology. Combined with all of the other issues associated with adapting SCR to a marine application, there is no basis for concluding SCR is appropriate for Cabrillo Port.

Mr. Powers also suggests that BHP should use aqueous ammonia to treat the SCV water so as to avoid problems with SCR catalyst poisoning. We appreciate Mr. Powers' candor in acknowledging that catalyst poisoning in this type of situation is a real concern. However, Mr. Powers suggestion is inapplicable to Cabrillo Port. Aqueous ammonia is a California Accidental



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Release Prevention (CalARP) Program listed hazardous material (19 CCR, Division 2, Chapter 4.5, Article 8). In order to ensure crew safety and act consistent with federal agency guidelines, aqueous ammonia cannot be stored or used on the FSRU, including use as a buffer in the submerged combustion vaporizers (Distrigas is a land-based facility with normal egress and so is not subject to these restrictions). The SCR NO_x controls on the main generators will vaporize urea solution in process to obtain ammonia gas, which will be injected directly into the catalytic reactors. Urea will be transported to the FSRU in dry form and dissolved in condensate water to make the urea solution. Urea and sodium bicarbonate are not listed hazardous materials, and were selected for their relative safety and ease of handling (dry chemicals). However, urea is not a buffering agent because its pH is neutral in solution, and can not be used for the SCV neutralization process. Another factor in the decision to use dry chemicals are the spill risks of transporting and transferring large quantities of aqueous (i.e., heavy) chemical solution to the FSRU from shore via supply boat. Federal agencies were concerned about these risks to the marine environment, which have been mitigated by the dry chemical strategy.

Mr. Powers further suggests that the concern of seawater impacts to the SCR are inaccurate because of the fact that the Mandalay and Ormond Beach generating stations are able to operate SCR in proximity to the ocean without issue. What Mr. Powers fails to point out, however, is that the combustion air intakes (forced draft fans) of the Mandalay and Ormond Beach generating stations are located approximately 200 and 300 meters (660 and 990 feet), respectively, from the shoreline. Thus, sea spray is prevented from directly entering the boiler combustion air pathways due to the long transport distances from the shoreline. This protects the SCRs at these facilities from salt contamination. The same would not be true for the FSRU, which would be directly exposed to sea spray during turbulent sea and weather conditions. Were this the only challenge faced by applying SCR to the SCVs, BHP anticipates that it could find means of filtering the large air stream in the same way that it is filtering the much smaller airstream going to the power generator engines. However, this is just one of the myriad of issues faced in trying to adapt SCR to the SCVs.

Finally, Mr. Powers inaccurately suggests that BHP overstates the cost of adapting SCR to the SCVs. Recent SCR installations on natural gas combustion equipment (small and medium sized electric utility boilers) located in Southern California have quoted installed costs ranging from approximately \$7,500/mmBTU (medium units)⁴ to \$12,500/mmBTU (small units)⁵. Medium

⁴ Etiwanda Units 1 and 2, located at Reliant Energy Etiwanda Generating Station located in Rancho Cucamonga, California. The quoted cost in 2002 for the installation of SCR was \$18 million for 2,400 MMBtus (two 1,200 MMBtu units).



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sized installations have lower unit costs due to economies of scale. For the eight 115 MMBtu/hr SCVs (920 MMBtu/hr total), the quoted cost for the SCV SCR is approximately \$13,000/MMBtu, which is consistent with small utility boilers. Thus, the \$12 million is consistent and reasonable considering the special design considerations of a floating offshore facility, and certainly not “high by nearly a factor of ten” as stated in the comment.

c. Support Vessel Emissions Are Appropriately Controlled

Mr. Powers repeats here a comment made by Ms. Sears by acknowledging that the engines proposed for use in the support vessels are state of the art, but questioning whether they will really emit at the levels anticipated in the application. BHP believes that this comment arises from a lack of understanding about how this type of electric engine tug is configured. As noted above in relation to Ms. Sears’ comment, electric propulsion engines are powered by an array of different generator engines that operate in different configurations according to the load. Because each individual engine operates at the top end of its power range, the levels predicted for the engines were accurate. The potential engine operating scenarios are defined in the response to Ms. Sears’ comment.

Mr. Powers misleads EPA and the Coastal Commission in his suggestion that SCR is applicable to natural gas fired tugs. SCR has been used successfully on many steady state, diesel fired marine applications, such as ferry boats. These engines operate in very predictable fashions, ramping up as they leave port, achieving a steady rate of operation and then slowing as they approach port again. This is completely different from the operation profile of a tug. Tugs, by their nature rev up and down rapidly and repeatedly as they perform their work. Therefore, installing SCR on a tug is much more challenging than installing SCR on a ferry. However, Wartsila has been developing SCR that is able to respond to the rapid changes in tug engines and is now prepared to offer a control package for diesel-fired engines used in tugs. No such package has yet been developed for gas fired tug engines, in part because the engines are already clean burning and in part because of the additional complexity and size of the gas burning systems.

Mr. Powers comment about SCR is now moot as BHP is offering to install SCR on its tugs and crew boat. As explained above, BHP is responding to community concerns about bringing LNG

⁵ Burbank Water and Power Units 3 and 4 located in Burbank California. The quoted cost in 2002 for the installation of SCR was \$15 million for 1,200 MMBtus (two 600 MMBtu units).



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into port in the holds of the support vessels and is instead proposing to use the same type of engines on diesel and to heavily control those emissions using SCR and oxidation catalysts. This possibility was identified to EPA in BHP's August 3rd comment letter and so post-dates Mr. Powers' comments. While the manufacturers are suggesting that at most times the SCR will control NOx at a level in excess of 90 percent, BHP is conservatively assuming only 80 percent control for purposes of the emission inventory. This ensures that the emissions will be controlled to the levels identified in the emissions inventory. The NOx, VOC, CO and PM₁₀ emission levels from the support vessels on diesel will be less than or equal to the emission levels of the support vessels on natural gas.

3. EDC Letter

Because EDC's letter largely repeats what is stated in the Sears letter and the Powers letter, BHP believes that it has largely responded to the issues in the EDC letter. We do not believe that it is worthwhile to repeat those arguments again. However, there are a few points raised in the EDC letter that are not restatements of the Sears letter and Powers letter. We do address each of those independent points.

a. EPA Appropriately Permitted Cabrillo Port As If It Were Located On Anacapa Island or San Nicolas Island

The Deepwater Ports Act states that the law of the nearest adjacent coastal state shall apply to a deepwater port "to the extent applicable and not inconsistent with any provision or regulation of this chapter or other Federal laws and regulations..." 33 U.S.C. § 1518(b). The Act also states that the laws of the United States must be applied "as if such port were an area of exclusive Federal jurisdiction located within a State." 33 U.S.C. § 1518(a)(1). EPA states in the Statement of Basis, as it stated to BHP Billiton in its June 29, 2004 letter (included in EPA's docket), that those local regulations that are incorporated into the State Implementation Plan are deemed consistent with Federal laws and regulations. Therefore, Federal requirements, in addition to local regulations incorporated into the State Implementation Plan, constitute the applicable requirements that apply to Cabrillo Port. EPA determined early in the permitting process that for a variety of reasons, the State Implementation Plan requirements from Ventura County were the appropriate requirements for Cabrillo Port.⁶

⁶ EDC, at page 8 of its comments, confuses the distinction between choosing the nearest adjacent coastal state and choosing the regulations within that state that apply to a deepwater



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EPA's role under the Deepwater Ports Act is to determine the substantive elements of the local State Implementation Plan and apply those requirements consistent with the underlying intent. There is no question that Cabrillo Port is located outside Ventura County and the Ventura County Air Pollution Control District; as a source located 14 miles offshore, it is by definition not within the County or District boundaries. The County rules cannot be applied in a strictly literal sense as they were not written with the intent that they would ever apply to a source located outside the County. If the District rules were literally applied, no permit would be required of Cabrillo Port as the District rules state that the new source review requirements apply only to sources located in Ventura County.⁷ To apply the District rules in a literal manner would produce absurd results clearly at odds with the Deepwater Ports Act. Therefore, EPA's role is to extract the substantive requirements and craft a means of applying those requirements consistent with the underlying purpose of the rules. This role was identified to BHP early in the permitting process when EPA stated that, depending on the facts of the situation, EPA might determine that it would be inconsistent with the CAA, or not "applicable" within the meaning of section 1518 of the DPA, to apply the nonattainment status of the onshore area to a deepwater port. See, Letter from Gerardo Rios (EPA Region 9) to Steve Meheen (BHP) (June 29, 2004). This statement demonstrates EPA's position that it must apply the local regulations in the context of facts it learns about the project. At the time of the June 2004 letter, EPA was of the opinion that this meant that Rule 26.2 applied to Cabrillo Port. However, as the agency learned more about the project and the history of the Rule 26.3(A)(2) exemption, it reconsidered its initial position and concluded that Rule 26.2 was inapplicable.

port. EDC suggests that because Cabrillo Port is a few miles closer to the mainland than it is to Anacapa Island, that it must be regulated as if it is an onshore source. This argument is misguided. In determining whether to utilize the regulations that were written for a new source located on Anacapa Island or a new source located on the mainland, EPA clearly must use a more reasoned analysis than what is geographically closer. EPA instead considered factors such as similarity of intervening topography, meteorology, distance from shore and nature and type of emissions. EPA is well schooled in applying such criteria as these are the same criteria it applies to determine whether an area (such as the Channel Islands) must be included as part of a nearby nonattainment area. EPA appropriately applied to Cabrillo Port the Ventura County requirements that apply to the other offshore portions of the County.

⁷ Rule 26(A) states: "Rule 26, which includes Rule 26.1 through 26.11, specifies the New Source Review provisions that are applicable to new, replacement, modified or relocated emissions units in Ventura County."



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In the draft permit, EPA applied the District's New Source Review rules consistent with their intent. Rule 26.3(A)(2) exempts sources located on the islands situated within the County (i.e., Anacapa Island and San Nicolas Island) from the Rule 26.2 New Source Review requirements. Onshore Ventura County sources, by contrast, are subject to Rule 26.2. The exemption in Rule 26.3(A)(2) was intended to remove offshore sources from the nonattainment New Source Review program, a rational and justifiable policy choice given their location and surrounding air quality. This intent was explicitly stated by the air district when it adopted the exemption into the District's rules in 1998. The staff report for the exemption states:

"Staff is proposing to exempt San Nicolas Island and Anacapa Island from nonattainment NSR because these areas are not included by the U.S.EPA in the nonattainment area of the District."

Ventura County Air Pollution Control District Revisions to Rule 26, New Source Review Final Staff Report at 1 (January 13, 1998). Later in the Staff Report, the District staff reiterated their intent:

"Subsection A.2 of Rule 26.3 is proposed to be added to exempt San Nicolas Island and Anacapa Island from nonattainment NSR. These areas are not included by the U.S. EPA in the nonattainment area of the District."

Id. at 5. We believe that EPA spent considerable time analyzing how best to apply the County rules, and, specifically, Rule 26.3(A)(2), consistent with their intent. While the Commission notes that a general rule of thumb is to interpret exceptions narrowly, that guidance is inapplicable in this situation. The District made the policy choice to exempt offshore sources from New Source Review because they are not within the federal nonattainment area.⁸ This

⁸ EDC wrongly suggests that the District added the exemption in Rule 26.3(A)(2) with the expectation that it would never be used. This is not supported by the rulemaking record which specifically identifies that the benefit of adding the exemption will be to lower costs for the Navy. The EIR accompanying the rule change did suggest that future emission increases at San Nicolas Island would be small and would not have significant impact on air quality. This does not impact the relevance of the Rule 26.3(A)(2) exemption as the project is subject to CEQA and the Department of State Lands (as lead agency) is evaluating the proposed emission increases and any mitigation that will avoid a significant impact. As a result of that process, sufficient mitigation has been proposed to avoid significant impacts from the project.



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intent was specifically stated at the time of rule adoption. The District limited the exemption to San Nicolas Island and Anacapa Island, and sources located within three miles of these islands, because these islands were the only portions of the County that were in attainment.

EPA's role is to take the substantive District requirements and apply them in a rational manner to a source that was never anticipated when the rules were drafted. Based on the District's express intent to exempt sources outside the County's nonattainment areas from Rule 26, the only rational conclusion was to exempt Cabrillo Port from Rule 26 as well. The reason that the Rule 26.3(A)(2) exemption was limited to Anacapa Island, San Nicolas Island and the three mile band around each was that this was the extent of the offshore County jurisdiction. EPA cannot simply apply the local rules in a vacuum without recognizing that Cabrillo Port is not located in the County. In determining how to apply the local rules that handle different portions of the County differently, EPA's role is to decide whether the intent of the Rule 26.3(A)(2) exemption was to exclude just the two islands or all portions of the County outside the Federal nonattainment area. Given the specific wording of the District Staff Report regarding the exemption, there is strong rationale and support to conclude, as EPA did, that the intent was to exclude those portions of the County outside the Federal nonattainment area. Therefore, in applying the District rules to a non-District source, EPA's decision to exempt Cabrillo Port from the District's New Source Review program is likewise well founded and appropriate.

EPA's decision to apply the exemption for San Nicolas and Anacapa Islands to Cabrillo Port based on the clear intent expressed by the District when it promulgated Rule 26.3(A)(2) is clearly warranted. EDC repeatedly misconstrues the state /local requirements that are federalized by the Deepwater Ports Act. As EPA stated in its June 29, 2004 letter, Section 1518(a) of the Deepwater Ports Act requires that the port be regulated as if it is located in an area of exclusive Federal jurisdiction within a State. Section 118 of the Clean Air Act specifies that in such areas it is the State Implementation Plan requirements that apply. EPA further states that those State laws consistent with the Clean Air Act and Deepwater Ports Act are considered federalized and are the controlling law for a deepwater port. EPA concludes that they are applying the Clean Air Act and the District rules approved by EPA into the State Implementation Plan. EDC misconstrues the applicable requirements by repeatedly suggesting that requirements outside the State Implementation Plan are relevant to the regulation of a deepwater port. That is not the case.

Cabrillo Port is not proposed to be located in Ventura County. However, the Deepwater Ports Act requires that the laws of the United States be applied "as if such port were an area of exclusive Federal jurisdiction located within a State." 33 U.S.C. § 1518(a)(1). The Deepwater Ports Act also states that the law of the nearest adjacent coastal State applies to any deepwater port "to the extent applicable and not inconsistent with any provision or regulation under [the



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Deepwater Ports Act] or other Federal laws and regulations...” 33 U.S.C. § 1518(b). EPA carefully analyzed these two mandates and issued a written determination that sections 110 and 118 of the Clean Air Act dictate that those local regulations that are part of the State Implementation Plan are the regulations deemed consistent with Federal law and therefore to be applied to a deepwater port. *See, Letter from Gerardo Rios (EPA Region 9) to Steve Meheen (BHP) (June 29, 2004).* In that same letter, EPA stated that, depending on the facts of the situation, EPA might determine that it would be inconsistent with the CAA, or not “applicable” within the meaning of section 1518 of the DPA, to apply the nonattainment status of the onshore area to a deepwater port. *Id.* at 11. This statement demonstrates EPA’s position that it must apply the local regulations in the context of facts it learns about the project. At the time of the June 2004 letter, EPA was of the opinion that this meant that Rule 26.2 applied to Cabrillo Port. However, the agency learned more about the project and the history of the Rule 26.3(A)(2) exemption and it ultimately reconsidered its initial position, concluding that Rule 26.2 was inapplicable. While some condemn EPA for keeping an open mind, we consider this to be the natural process that an agency is supposed to engage in of gathering facts and adjusting conclusions as new information comes to light.

By regulating Cabrillo Port the same as if it were one of the County’s islands, EPA applied the substantive elements of the District’s rules consistent with the intent of the drafters. This is what is required by the Deepwater Ports Act.

b. Cabrillo Port Will Not Just Protect Coastal Air Quality, Cabrillo Port Will Improve Coastal Air Quality

At page 9 of its letter, EDC states that Cabrillo Port must be permitted in a manner that protects coastal air quality. EPA is proposing to do just this. The air permit contains a wide variety of conditions that, as explained below, hold BHP to the highest achievable standards. In addition, BHP is being required to honor its contracts to repower two tugs that operate along the coast. These requirements not only ensure that Ventura County’s coastal air quality is protected, it ensures that Ventura County’s coastal air quality will improve as a result of Cabrillo Port.

Ventura County’s coastal air quality is distinct from its inland air quality. Ozone, hydrocarbons, SO₂ and NO_x were all monitored on Anacapa Island from 1988 to 1992, when that station was removed. The Anacapa Island monitor data for 1990-1992 indicate that Anacapa Island was easily attaining the 1-hour and 8-hour standards. For example, the design value was 72 ppb for



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the 1990 to 1992 period (as compared to the 85 ppb standard).⁹ The Santa Rosa Island monitor continues to indicate that the offshore portions of the County are easily attaining the 8-hour ozone standard. The design value for Santa Rosa Island for 2002 through 2004 was 68 ppb—again dramatically below the 85 ppb 8-hour ozone standard. Equally telling is the fact that the ozone levels along the Ventura County shoreline are extremely low; the design value at the Emma Wood State Beach monitor for 2003 through 2005 was 68 ppb. The Emma Wood monitor has not experienced a single reading in the past eight years equal to or greater than the 8-hour standard of 85 ppb. The monitors in Ventura County that documented exceedances of the 8-hour ozone standard are the inland monitors that are most affected by onshore mobile sources. The coastal areas, which are affected by marine sources, have maintained consistently high quality ambient air.

The bottom line question in considering EDC's comment is whether Ventura County's coastal air quality will improve or degrade as a result of Cabrillo Port. If Cabrillo Port is built, there will be an increase in offshore NOx emissions of 124.5 tons—including all vessel emissions within Federal waters. If emissions in California Coastal Waters are also included, the increase will be approximately 160 tons per year. However, if Cabrillo Port is built there will be a corresponding decrease in NOx emissions of more than 175 tons per year. By removing existing major sources of NOx emissions that operate close to Ventura County's coast, BHP will ensure that the air quality actually improves over what it is today even with Cabrillo Port operating at its maximum permitted capacity. Therefore, all the talk of Cabrillo Port interfering with Ventura County's attainment plan is simply false.

c. EDC Misrepresents Cabrillo Port's Emissions Relative to Other Sources

EDC makes many grossly inaccurate claims about Cabrillo Port and its emissions in an attempt to mislead the regulatory authorities. For example, at page 13 of its letter EDC claims that "The NOx emissions identified by EPA just for the FSRU (66.07 tons per year) are almost twice as much as those emitted by the top OCS source of NOx." This is far from the truth. Platform Gail, an OCS source, is permitted for over 85 tons per year of NOx. Platform Gilda is permitted for over 83 tons per year of NOx. BHP is requesting that Cabrillo Port be permitted for materially less NOx than either of these OCS sources. EDC similarly claims at page 13 of its letter that Cabrillo Port would be one of the top five NOx emitting sources in Ventura County.

⁹ The "design value" is the computed value that is used to determine compliance with an ambient air quality standard. For the 8-hour ozone standard, the design value is computed as 3 year average of the 4th high daily maximum 8-hour averages.



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This claim is also false. Cabrillo Port's requested NOx emission rate is well below the permitted emission rate of the top five NOx emitters in Ventura County, listed below.

Top Five Permitted Emission Sources in Ventura County				
Source	NO _x	ROC	CO	PM
Ormond Beach Generating Station	621.47	86.70	2778.17	154.34
Mandalay Generating Station	222.62	24.22	675.50	43.52
San Nicolas Is. Naval Base	205.34	14.51	53.29	14.51
Procter and Gamble	182.21	80.75	306.70	69.18
Platform Gail	85.07	33.65	105.64	5.34
Total	1,316.71	239.83	3,913.30	286.89

^a Naval Base emissions do not account for any of the vessel emissions associated with the facility.

In fact, Cabrillo Port's permitted NOx emission rate would equal only 6 percent of the total permitted NOx emissions from the top five stationary sources in the county. If EDC is suggesting that Cabrillo Port's maximum allowable emissions should be compared to another source's actual emissions, it is attempting to compare fundamentally different values. This would be akin to comparing the highest number on a car's speedometer to the speed at which another person actually drives their car. It would be highly unusual to ever see a source emit up to the limits in its permit. Therefore, in order to have an "apples to apples" comparison, one must compare the permitted limits of existing sources to Cabrillo Port's requested emission limits. When comparing limits in this manner, it is clear that Cabrillo Port is not one of the top five permitted sources in the County. In fact, Cabrillo Port's emissions would be a small fraction of the County's inventory. The 2005 Ventura County NOx emissions inventory (reproduced below) identified 22,203 tons per year and 61 tons per day of actual NOx emissions from the top 25 source categories alone.

Ventura County Annual Average	2005 NO _x Emissions			2010 NO _x Emissions		
	tons/day	Tons/yr	percent	tons/day	tons/yr	percent
Ships and Commercial Boats	15.69	5,727	25.8%	18.49	6,749	34.0%
Heavy Duty Diesel Trucks	9.65	3,522	15.9%	7.41	2,705	13.6%
Light Duty Passenger Cars	10.86	3,964	17.9%	7.30	2,665	13.4%



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Ventura County Annual Average	2005 NO _x Emissions			2010 NO _x Emissions		
Off-Road Equipment (Construction and Mining)	6.69	2,442	11.0%	5.16	1,883	9.5%
Farm Equipment (Tractors)	2.89	1,055	4.8%	2.32	847	4.3%
Off-Road Equipment (Other)	2.57	938	4.2%	2.04	745	3.8%
Agricultural Irrigation Pumps	1.84	672	3.0%	1.64	599	3.0%
Residential Fuel Combustion	1.56	569	2.6%	1.52	555	2.8%
Heavy Duty Gas Trucks	1.78	650	2.9%	1.33	485	2.4%
Service and Commercial (Boilers, IC Engines)	1.00	365	1.6%	1.04	380	1.9%
Manufacturing and Industrial (Boilers, IC Engines)	0.81	296	1.3%	0.89	325	1.6%
Electric Utilities	0.84	307	1.4%	0.88	321	1.6%
Trains	0.94	343	1.5%	0.81	296	1.5%
Recreational Boats	0.65	237	1.1%	0.68	248	1.3%
Ag Burning	0.44	161	0.7%	0.46	168	0.8%
Aircraft						
Oil and Gas Production (Combustion)	0.33	120	0.5%	0.31	113	0.6%
Heavy Duty Urban Buses	0.28	102	0.5%	0.28	102	0.5%
Motor Homes	0.38	139	0.6%	0.28	102	0.5%
Off-Road Equipment (Lawn And Garden)	0.38	139	0.6%	0.25	91	0.5%
School Buses	0.20	73	0.3%	0.21	77	0.4%
Other (Fuel Combustion)	0.26	95	0.4%	0.21	77	0.4%
Motorcycles	0.13	47	0.2%	0.14	51	0.3%
Off-Road Recreational Vehicles	0.06	22	0.1%	0.07	26	0.1%
Other (Industrial Processes)	0.07	26	0.1%	0.07	26	0.1%
All Other NO _x Sources	0.53	193	0.9%	0.58	212	1.1%
Total for All Sources	60.83	22,203	100.0%	54.37	19,845	100.0%

Source: California Air Resources Board

Our identification of these values is not intended to minimize the emissions attributable to Cabrillo Port. BHP recognizes that the emissions from the project are material and is therefore proposing to offset them in their entirety by repowering two coastal tugs. However, we cite these values to correct the clear misstatements made by EDC in their letter.

d. Cabrillo Port Will Employ BACT For All Emission Units

EDC wrongly states that Cabrillo Port will not be utilizing BACT for all emission units. EDC states that what BHP has proposed does not constitute BACT for the SCVs and the generator engines, citing to the Powers letter. However, as noted above the Powers letter is inaccurate in



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its claims as to what is BACT for these two devices. Therefore, EDC lacks support for this claim.

EDC also argues that BHP has not applied BACT for its marine vessels, arguing that the tugs and crew boat should be equipped with SCR. The marine vessels are not subject to BACT under Ventura County's rules. However, even if they were, they will be equipped with SCR and oxidation catalysts. EDC acknowledges in its letter that these controls would constitute BACT if BACT applied to marine vessels.

EDC strangely argues at page 17 of its letter that the draft ATC does not include adequate conditions to ensure that BHP complies with its emission limits. BHP does not understand the basis for this complaint. The draft ATC requires continuous monitoring of both the SCVs and the generator engines. It is unclear how BHP could possibly document continuing compliance better than the use of continuous emissions monitors.

e. BHP Has Accurately Estimated Cabrillo Port's Potential To Emit

EDC erroneously suggests that BHP has incorrectly estimated Cabrillo Port's potential to emit. EDC attempts to argue at page 19 of its letter that BHP has inaccurately computed its NOx potential to emit because there may be variations in the natural gas burned in the SCVs and generator engines that could lead to higher than predicted emissions. EDC offers no evidence that the SCVs or generator engines are sensitive to variations in gas higher heating value—even if such variations occurred. Devices of this type are in fact not particularly sensitive to variations in gas heating value for a variety of reasons. First, the generator engines are controlled by SCR with feed-forward and feedback loops for regulating urea injection rates that ensure that any variations in emissions out of the back of the unit are controlled to meet the proposed permit limit. Likewise, the low-NOx SCVs are designed to prevent any measurable change in emissions were there to be any variation in the higher heating value of the gas being burned. The concern raised by South Coast AQMD in relation to higher heating value variations relates to simple fixed orifice burners (e.g., residential water heaters) and the theoretical potential for increased thermal NOx generation.¹⁰ Whatever one thinks of the air district's theory, thermal NOx

¹⁰ NOx is formed either through the oxidation of fuel bound nitrogen or through the process of high temperature spots within the combustion zone literally stripping trace amounts of nitrogen out of the air and combining it with oxygen to form NOx. The latter is referred to as thermal NOx and is most often addressed through restricting the temperature of the combustion zone through staged low excess air burners or through slightly quenching the flame with



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variation is not a material concern for the SCVs as the SCV burners utilize staged low excess air combustion to minimize the formation of thermal NOx. In addition, the burners are immersed in a water bath which serves as a peak flame temperature quench, a situation that ensures that the underwater flame temperature is maintained within acceptable range and avoids the concern about excessive thermal NOx formation as the result of "hot gas." Utilizing staged low excess air combustion and water immersion, the SCV will minimize the possibility of hot zones forming in the SCV burners and thereby keep NOx emissions constant at or below the permitted NOx levels. It is also important to note that the generator engine and SCV NOx emission rates will be continuously monitored and BHP would immediately take action to avoid a permit exceedance. Therefore, there is no reason to expect that the gas-fired FSRU equipment would be affected even if there were variations in the higher heating value of the fuel gas.

f. BHP Has Accurately Estimated Cabrillo Port's Marine Vessel Emissions

As described in relation to the Sears letter, EDC's expert has a material misunderstanding of how the carriers and tugs serving Cabrillo Port operate and emit as well as misunderstanding of what constitutes the permitted source under the ATC. The tug and crew boat emissions that occur in District waters and the carrier emissions attributable to the unloading of LNG are attributable to the stationary source. However, the points that EDC attempts to make regarding carrier emissions associated with to and fro activities and hoteling have no relevance to the stationary source ATC process. EDC and Ms. Sears also labor under a severe misconception of how an LNG carrier works, suggesting at page 21 of the EDC letter that BHP has failed to include "emissions from LNG carrier generator or auxiliary boiler emissions." The LNG carriers have multiple engines that turn generators. These generators provide electricity to power the carrier's electric engines. There is no boiler and there are no auxiliary generators on this type of carrier.

EDC similarly tries to create an issue where none exists when it states at the bottom of page 22 that EPA has failed to take into account carrier emissions outside of Federal waters. There is no basis under the Clean Air Act or under Ventura County APCD rules to include the carrier emissions as part of the permitted stationary source. Ventura County APCD's rule is quite clear what emissions are included as part of the stationary source and this intent was conveyed in writing to EPA in early 2004. EPA acted appropriately in conjunction with the air district's

moisture (water or steam). Both of these control strategies minimize the potential for hot spots in the combustion zone and promote a uniform flame temperature that is least conducive to thermal NOx formation. The SCVs take moisture injection to an extreme by immersing the entire burner in a water bath.



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longstanding interpretation of its own rule as well as established caselaw. If EPA had not acted in compliance with the air district's regulatory interpretation, the air district could have complained. As you know, however, from your staff's meetings with Ventura County APCD, they agree with EPA's application of the stationary source rule. Therefore, the allegation that the carrier emissions outside of Federal waters were inappropriately left out of the ATC is incorrect. EPA lacks jurisdiction to address these emissions through the ATC process. This does not mean that carrier emissions within Federal waters are not evaluated, as they are through the NEPA/CEQA process. However, they are not part of the ATC evaluative process.

g. Cabrillo Port is Not a Major Stationary Source

EDC incorrectly states that Cabrillo Port is a "fuel conversion plant" in direct contradiction of EPA's longstanding interpretation of its own rules. EPA is entrusted with interpreting its own rules, particularly in relation to interpreting terms that it developed. In 1974, EPA decided to develop the first national New Source Review rule. This new program only applied to sources in one of 19 source categories, one of which was "fuel conversion plants." The 19 source categories were those source categories for which new source performance standards ("NSPS") were proposed or promulgated at the time. Therefore, EPA had a clear idea of what source categories it intended for each of the original nineteen categories. When Congress modified the Clean Air Act in 1977 to incorporate an expanded version of EPA's regulations into the current new source review program, the reference to fuel conversion plants was adopted verbatim from EPA's rules.

Although the term "fuel conversion plant" is not defined in the New Source Review rules, significant precedent documents that LNG gasification plants are not within the source category. Shortly after creating the fuel conversion plant source category, EPA issued guidance describing what it intended. In that 1976 guidance document, EPA stated:

"Fuel conversion plants are defined for purposes of PSD as those plants which accomplish a change in state for a given fossil fuel. The large majority of these plants are likely to accomplish these changes through coal gasification, coal liquefaction, or oil shale processing. The recently promulgated NSPS governing new coal preparation plants regulate most particulate emissions from pre-gasification or liquefaction operations and thereby define BACT for them. NSPS for both SO₂ and PM already exist for the boilers which are necessary in most fuel conversion operations to generate process steam. An SSEIS



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for coal gasification plants is being drafted with the intent to include the gasification process itself for sulfur and HC emissions in cases where pipeline quality gas would be produced.”

Clarification of Sources Subject to Prevention of Significant Deterioration (PSD) Review; from D. Kent Berry, (U.S. EPA) to Asa B. Foster, Jr. (U.S. EPA) (January 20, 1976). This guidance document clearly states that the classification “fuel conversion plants” was intended to apply to facilities that changed the state of the fuel. There was no intent to pick up facilities that simply effected a phase change in order to make transportation more efficient. If that was the case, then every pipeline compressor would be considered a fuel conversion facility because the compressor similarly renders the gas more compact. If simple compression or phase change unaccompanied by some other conversion were intended to be included within the definition of fuel conversion facility, then EPA could and would have said so. Instead, the agency identified fuel conversion as the process of changing a material such as shale to oil or coal to methane. Such facilities truly convert a fuel. Speeding the natural warming process of natural gas without causing any sort of a conversion is not a fuel conversion process.

EPA has specifically addressed this point in relation to LNG terminals and similarly concluded vaporizers are not fuel conversion facilities as that term is used in the Clean Air Act and the PSD regulations. In permitting the Energy Bridge project, EPA considered at length whether LNG vaporization is a fuel conversion process. In a recent well reasoned opinion, EPA concluded that a fuel conversion process is one that will not occur without external activity. The agency ultimately concluded that the vaporization processes used at LNG terminals simply speeds up a naturally occurring process—it is a given that LNG will turn to gas on its own without the use of vaporization technology. Because the vaporization process occurs regardless of the LNG terminal process, EPA concluded that the vaporization of LNG cannot be a fuel conversion process. Request for Guidance on the Definition of Fuel Conversion Plants for the Purpose of Prevention of Significant Deterioration from Raqueline Shelton (U.S. EPA) to Guy Donaldson (U.S. EPA) (July 31, 2003). It is noteworthy that among the numerous LNG terminals to be permitted in this country since the PSD program was enacted, not one of those facilities was determined to be a fuel conversion plant.

EDC inexplicably states in its ATC comments that vaporization of LNG will not occur naturally at ambient conditions. BHP is rather surprised at this comment given the extensive comments EDC has made in other forums regarding the ability of LNG to vaporize under ambient conditions if it were to be released from the FSRU. It is contradictory for EDC to in one forum claim that LNG can convert to gas under ambient conditions and then in another forum claim it



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does not. How EDC can claim that LNG will not gasify under ambient conditions defies the laws of physics.

As EDC states in its comments, what defines a fuel conversion facility is whether there is a “manufactured process change.” In order to have a fuel conversion plant, a source must manufacture a new type of fuel. This is the case in each of the examples that EPA has used of what is considered a fuel conversion process. Shale is manufactured into oil, coal is manufactured into methane, municipal solid waste is manufactured into a burnable gas. In each of these situations, one material is fed into the process and a different material, or a subset of the original material, emerge. The input could not be confused with the output and the input would not change into the output but for the fuel conversion process. In relation to natural gas, there is no such manufactured process change. Instead, you have natural gas as the input and natural gas as the output of the vaporization process. The only difference is one of temperature. If EDC’s argument were valid, every facility burning bunker fuel oil would be considered a “fuel conversion plant” as that fuel must be warmed as it leaves the tank to get it to be a fluid capable of pumping and ultimately injection into a burner. Clearly this is not the case and interpreting EPA’s source category in this manner would lead to ridiculous results. Warming a fuel is not equivalent to a process where one manufactures a new fuel from a raw material.

EPA is entitled to deference in interpreting the term “fuel conversion plant.” EPA developed the term “fuel conversion plant” when it developed the initial PSD program in 1974. The term was subsequently adopted by Congress from EPA’s rules as part of the 1977 Clean Air Act amendments. Given EPA’s role in developing the term and the fact that Congress then adopted verbatim EPA’s verbiage, EPA’s interpretation of that term is entitled to substantial deference. Where EPA has concluded that the specific facility at issue is not a fuel conversion facility, it is inappropriate for another agency that lacks the regulatory history with the program to substitute its judgment for that of the agency that wrote the rule in the first place.

For these reasons, it is clear that Cabrillo Port is not a fuel conversion plant and is not in whole or in part subject to the 100 ton per year PSD threshold. We note that even if Cabrillo Port were subject to the PSD permitting regime, there is nothing more that would be required of the facility beyond what it has done already.

h. Cabrillo Port is Clearly Not Subject to CAA Section 112(r)

EDC rather belatedly tries to challenge EPA’s conclusion that Cabrillo Port is not subject to 112(r) of the Clean Air Act. This section applies to manufacturing facilities that store certain



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chemicals as part of a manufacturing process. By statute, the program does not apply to facilities engaged in the storage and transportation of natural gas. EDC claims that BHP is engaged in something more than the storage and transportation of natural gas but never identifies what those activities are or how they come within the scope of the statute. Furthermore, they never suggest what difference it makes as the 112(r) programs' primary feature is to require a source to evaluate potential impacts from a worst case release. As EDC knows, this evaluation has taken place in much greater detail than would ever be required by the Section 112(r) program.

5. Conclusions

EDC's comments to EPA on the draft Cabrillo Port air permit focus almost exclusively on EPA's choice not to require major New Source Review and on criticism of the emission controls proposed by BHP and evaluated by EPA. BHP believes that EPA applied the best interpretation of the Deepwater Ports Act and the Clean Air Act in determining the applicable requirements in the draft permit. By utilizing Best Available Control Technology and the reducing marine vessel emissions in California Coastal Waters by an amount greater than what will be emitted by the project, BHP is ensuring that the air quality will be better if Cabrillo Port is built. BHP will also set new precedents for controlling and preventing emissions from vessels and stationary sources of this type.

Sincerely,

Thomas R. Wood

TRW:nh

cc: Ms. Alison Dettmer
Ms. Renee Klimczak
Mr. Rick Abel

Attachments:

- 1) BACT Demonstration
- 2) Emissions Inventory